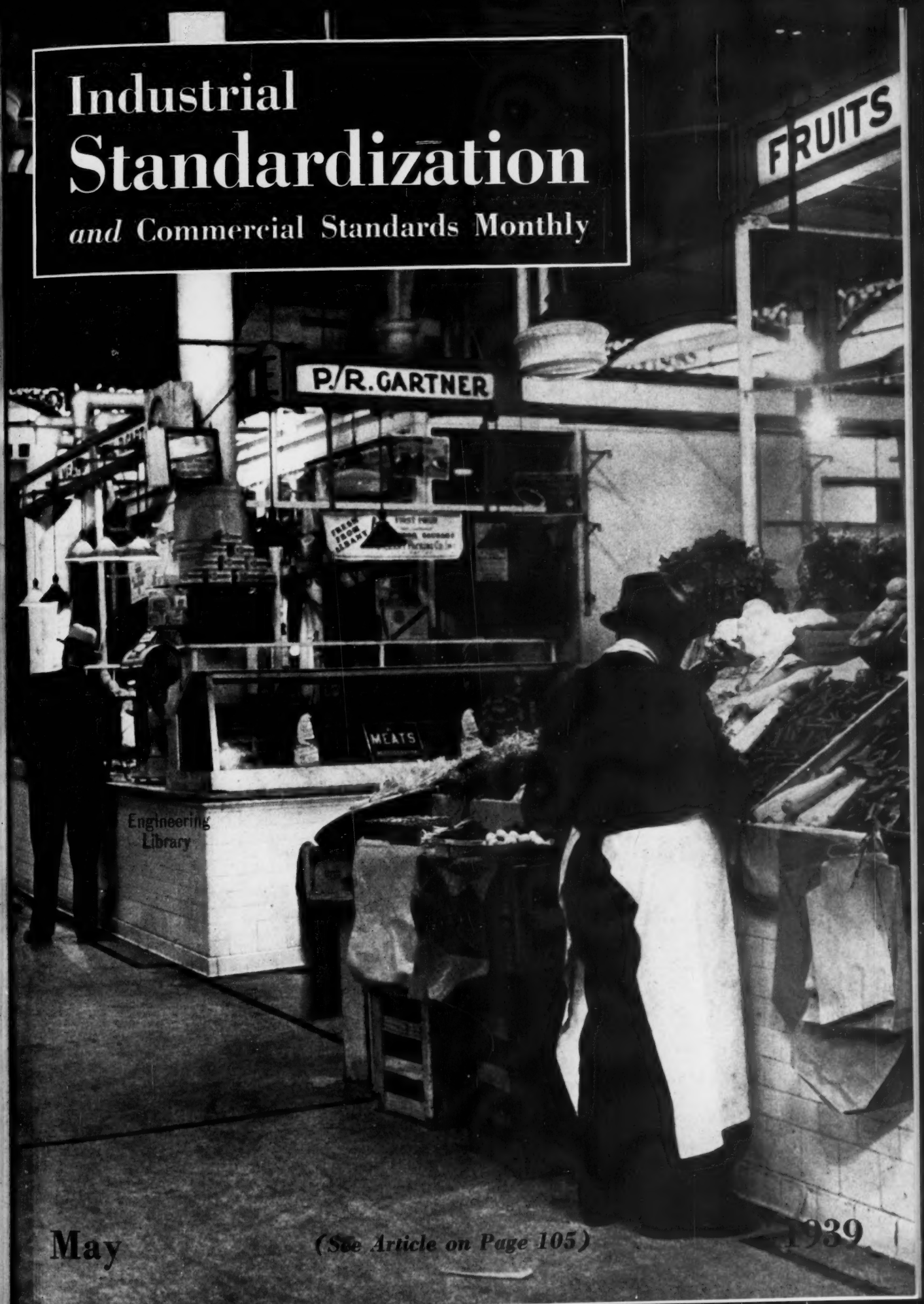
Industrial Standardization

and Commercial Standards Monthly



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May 1939

(See Article on Page 105)

Standardization—
"Unfolding of the Future" or
"Imprisonment of the Past"?

"An economic standard of quality is not a written finality but a dynamic process in which modern statistical theory plays an important role.

"It is not merely the imprisonment of the past in the form of a specification but also the unfolding of the future as revealed in the process of production and inspection.

"These facts must be taken into account in the production and exchange of economic goods if the most economical use of raw materials in the satisfaction of human wants is to be attained."

—Walter A. Shewhart, Bell Telephone Laboratories. Quoted from a paper presented before the Econometric Society, Detroit, December, 1938.

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RUTH E. MASON, *Editor*

This Issue

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ASA

Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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May, 1939 **Vol. 10, No. 5**

Code for Mechanical Refrigeration Meets Developments in Industry

Safety rules in design, manufacture, and installation of refrigerating systems are brought up-to-date to cover problems due to new and wider use of mechanical refrigeration

by

Chester Lichtenberg

Vice-President, American Society of Refrigerating Engineers

MORE than 12,000,000 home owners have bought electric refrigerators during the past ten years. Almost a million kilowatts of electric refrigeration for air conditioning purposes have been installed in this same period. Restaurants, meat markets, drug stores, and many other retail food sales outlets have installed mechanical refrigeration for food preservation. Countless industries depend upon mechanical refrigeration for economical processing. Thus, mechanical refrigeration has thoroughly entered the daily life of every citizen and with this penetration have developed the requirements to safeguard human health and life.

Mechanical refrigeration usually employs a fluid in a closed circuit to transfer heat from one place to another. The liquid absorbs heat as it changes from the liquid state to the vapor state. This change usually takes place in an evaporator or cooling unit. The vapor is then drawn to the refrigerating machine where it is changed to the liquid state as the heat is withdrawn from it.

Refrigerating systems in general use operate at pressures up to about 250 pounds per square inch and require a definite quantity of refrigerant to be circulated in them for best operation. Leaks in the refrigerating system will not only stop the refrigerating cycle but may imperil health or life, depending upon the nature of the refrigerants used and their concentration.

The American Society of Refrigerating Engineers, recognizing the need for safety rules in the design, manufacture, and installation of refrigerating systems, has for a number of years sponsored American Standards Association Sectional Committee B9 which in 1930 produced the first Safety Code for Mechanical Refrigeration. This was revised in 1933 and until recently was the American Standard Safety Code for Mechanical Refrigeration.

About five years ago the design of refrigerating equipment was radically changed. Hermetically sealed units began to appear in greater numbers.

Our Front Cover

The safety recommendations of the newly revised Code apply to mechanical refrigerators in apartment houses, hotels, restaurants, drug stores, markets and other places where large or small installations are needed. They also apply to refrigeration installations for air conditioning.

The cover picture, by Charles Phelps Cushing, shows refrigeration equipment in the Washington Market, New York City.

Safer refrigerants were made available. A wider spread use of automatic refrigeration became possible through improvements in the art. These and other changes required a revision of the 1933 edition of the American Standard Safety Code for Mechanical Refrigeration and in recognition of this need, American Standards Association Sectional Committee B9 on October 18, 1934 authorized the appointment of a General Subcommittee, with power to develop and present for approval the necessary revisions in the classification of refrigerants and in the Safety Code for Mechanical Refrigeration.

The General Subcommittee was composed of seven members and two alternates (see box on this page).

The General Subcommittee worked for over three years collecting the necessary information, collating it, checking it, and reviewing it with many individuals. They received a very substantial amount of assistance from the Joint Refrigeration Industry Committee and from representatives of municipalities. These included Gerald Gearon of Chicago, E. H. Mills of Detroit, and A. R. McGonegal of Washington, D. C., in addition of course to Mr. Michaels of New York who, as a member of the subcommittee, attended most of the meetings.

The General Subcommittee presented a progress report to the sectional committee on January 27, 1937 and on November 17, 1938 submitted its final report with a recommended revision of the code.

Harry D. Edwards, chairman of ASA sectional committee B9, appointed a General Subcommittee to develop revisions in the classification of refrigerants and general provisions of the Safety Code for Mechanical Refrigeration for the ASA committee to consider. The seven members and two alternates who comprised the membership of the subcommittee were:

George E. Hulse, chief engineer, Safety Car Heating & Lighting Company, New Haven, Conn., *Chairman*

Chester Lichtenberg, American Society of Refrigerating Engineers, *Secretary*

W. M. Timmerman, General Electric Company, *Acting Secretary (alt. to Mr. Lichtenberg)*

C. S. Cragoe, Physicist, National Bureau of Standards
Clarence K. Michaels, Engineer, Bureau of Combustibles, Fire Department of the City of New York
S. V. James, vice-president, Underwriters' Laboratories, Inc., Chicago, Illinois
C. W. Rulon, Underwriters' Laboratories, Inc., New York *(alt. to Mr. James)*
E. T. Williams, Consulting Refrigeration Engineer, New York
L. S. Morse, Executive Engineer, York Ice Machinery Corporation, York, Penna.

The 1939 revision of American Standard Safety Code for Mechanical Refrigeration is comprehensive in its scope. The increased range of its provisions is shown in the Tables of Contents of the 1939 edition compared with the 1933 edition and the 1930 edition, in the tabulation below.

Section Number	*1930 Edition*	*1933 Edition*	*1939 Edition*
1	Scope and Purpose	Scope and Purpose	Scope and Purpose
2	Definitions	Definitions	Definitions
3	Classification of Refrigerating Systems	Classification of Refrigerating Systems	Building Occupancy Classification
4	Industrial and Commercial Systems	Industrial and Commercial Systems	Refrigerant System Classification
5	Unit Systems	Unit Systems	Refrigerant Classification
6	Apartment Dwelling Systems	Apartment Dwelling Systems	Institutional Occupancy
7			Public Assembly Occupancy
8			Residential Occupancy
9			Commercial Occupancy
10			Industrial Occupancy
11			Installation Requirements
12			Refrigerant Piping, Valves, Fittings and Related Parts
13			Design, Construction and Safety Devices
14			Tests
15			Instructions

H. D. Edwards
Chairman, ASA committee B9

George E. Hulse
Chairman, subcommittee on revision

Courtesy Refrigerating Engineering

Chester Lichtenberg
Secretary, subcommittee on revision

The form of the 1939 revision permits a more convenient reference to the safety requirements. The types of places used for human occupancy which may be equipped with automatic mechanical refrigeration are grouped in accordance with the nature of the human occupancy. Places in which persons are harbored or confined are subjected to the most stringent safety rules. Places where a large number of persons may congregate and where the panic hazard is high are subject to slightly less rigid rules because the persons are relatively free to act in cases of emergencies. Places where people live and places where they work are in turn subjected to requirements which afford safety under the usual conditions of such occupancy.

Refrigeration systems are defined in the 1939 revision in accordance with the basic designs viewed from a safety standpoint. They are divided into direct systems, unit systems, indirect open spray systems, indirect closed circuit systems, indirect vented closed circuit systems, double indirect vented open spray systems, indirect absorptive brine systems and double refrigerant systems. Each is defined, and in appropriate parts of the code given application limits on the basis of safety to human life.

Three Groups of Refrigerants

Refrigerants in the 1939 revision are divided into three groups, dependent upon the hazards which they present in an automatic mechanical refrigerating system. The grouping has been based on the published results of reliable experimental data and the broad application and operating experience of the members of the committee.

Safety limitations of refrigerating system applications, and the kind and quantity of refrigerants are grouped for each kind of building occupancy. This brings together in one place in the 1939 revision all of the special safety rules for each specific building occupancy.

General Safety Rules

General safety rules in the 1939 edition are placed in five sections, treating of the installation requirements, the limitations of refrigerant piping, refrigerant valves, refrigerant fittings and their related parts, the safety requirements to be observed in the design, construction and tests of automatic mechanical refrigerating systems and instructions which safety indicates should be supplied.

Necessities for the 1939 revision arose primarily because of the rapid and widespread application of automatic mechanical refrigeration. Formerly, mechanical refrigeration was confined to relatively large plants housed in buildings specially designed for the purpose and having the equipment operated by skilled personnel. The development of automatic mechanical refrigerating equipment, and its progressively lower cost particularly in the smaller sizes, opened vast fields for its application and brought the need for more comprehensive safety rules commensurate with automatic operation of this equipment in practically all kinds of buildings where human beings eat or sleep or work or play or are harbored or confined. Just as the increasing use of cheap automotive transportation brought with it the requirements for new highway and street safety rules, so the widespread application of automatic mechanical refrigeration brought the

need for revised safety rules more commensurate with the new situations that these applications developed.

American Standards Association Sectional Committee B9 reviewed the proposed revisions in detail and after making minor changes gave unanimous approval to the code at its November 17, 1938 meeting subject to a mail ballot.

The mail ballot was sent to all members of American Standards Association Sectional Committee B9 with the revised code on November 23, 1938 and the mail ballot closed with favorable results.

The sponsor organization, the American Society of Refrigerating Engineers, also reviewed the proposed revision and on December 30, 1938 forwarded it to the American Standards Association with a recommendation that it be adopted.

American Standard Safety Code for Mechanical Refrigeration B9-1939 is a comprehensive revision of the 1933 edition and represents the best and latest approved safety practice for mechanical refrigeration systems.

"Standards Are Sound Business"

"Standards concern business and industry not simply because the consumer is on our trail but because it is sound business for honest merchants and manufacturers to arrive at definite standards of quality and of terms that will mean the same things at all times to all people. We need to recognize that when a consumer buys an article for a specific purpose, whether she recognizes it or not, that article requires certain qualities, and if it does not possess them it will not adequately serve the purpose."—*Retailing, January 30, 1939.*

Many National Organizations Brought Together by ASA

A representative committee of the many organizations closely concerned with the problems of manufacturing, installing, and using mechanical refrigeration worked under the leadership of the American Society of Refrigerating Engineers in developing the new revision of the Safety Code for Mechanical Refrigeration (B9-1939).

Members of that committee, brought together through the procedure of the American Standards Association, are:

H. D. Edwards*, International Acetylene Association, *Chairman

D. L. Fiske, Secretary

American Society of Refrigerating Engineers, *George B. Bright, Van Rensselaer H. Greene, Glenn Muffly, E. T. Williams, George E. Hulse (alt.) A. R. Stevenson, Jr., (alt.)*

American Chemical Society, *F. G. Keyes, W. H. Hainsworth (alt.)*

American Gas Association, *N. T. Sellman, W. S. Walker (alt.)*

American Institute of Chemical Engineers

American Institute of Electrical Engineers, *W. C. Goodwin*

American Institute of Refrigeration, *Fred Ophuls*

American Society of Civil Engineers, *A. B. Heiser, R. F. Bessey (alt.)*

American Society of Heating and Ventilating Engineers, *Lee Nusbaum, J. L. Lyle (alt.)*

American Society of Mechanical Engineers, *Oscar A. Anderson, Crosby Field, E. W. Gallenkamp, Walter F. Jones, A. W. Oakley (alt.)*

American Society of Sanitary Engineering

American Warehousemen's Association, *G. A. Horne*

Bureau of Explosives, *Guy E. Carleton*

Compressed Gas Manufacturers Association, *Franklin R. Fetherston*

Electric Light and Power Group, *S. S. Sanford, J. O'R. Coleman (alt.)*

Institute of American Meat Packers, *W. Lee Lewis*

International Acetylene Association, *H. D. Edwards, M. G. Farrar (alt.)*

International Association of Governmental Labor Officials, *J. C. Stennett (alt.)*

International Association of Industrial Accident Boards and Commissions, *Joseph F. Scott, John W. Price (alt.), Ed. Walker (alt.)*

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National Association of Practical Refrigerating Engineers, *Martin Vander Veer*

National Conservation Bureau, *Dan L. Royer*

National Electrical Manufacturers Association, *J. H. Ashbaugh, V. A. Hetzel, Wm. W. Higham, Chester Lichtenberg, R. W. Davis (alt.), L. A. Philip (alt.), Ira Reindell (alt.), W. M. Timmerman (alt.)*

National Fire Protection Association, *H. E. Newell*

National Retail Dry Goods Association, *Leonard F. Mongeon*

National Safety Council, *S. E. Whiting, H. S. Smith (alt.)*

New York Board of Fire Underwriters, *William B. White, J. L. King (alt.)*

New York City Bureau of Fire Prevention, *C. K. Michaels*

Refrigerating Machinery Association, *A. H. Baer, W. H. Carrier, L. S. Morse, Sr.*

Underwriters' Laboratories, Inc., *S. V. James, C. W. Rulon (alt.)*

U. S. Department of Commerce, National Bureau of Standards, *C. S. Cragoe*

U. S. Department of Labor, *Alfred Peabody*

Guide for Heating, Ventilating And Air Conditioning Issued

The 1939 edition of the *Heating, Ventilating, Air Conditioning Guide*, just published by the American Society of Heating and Ventilating Engineers, contains a larger Technical Data Section than any of the previous annual reference volumes, the Society announces. In addition to the Technical Data Section, the book contains a Catalog Data Section in which the products of different manufacturers are described. The findings of the Research Laboratory of the Society and cooperating universities which have contributed toward the advancement of the science of heating, ventilating, and air conditioning in 1938 have been summarized and included in this edition of the *Guide*.

A new chapter on Central Systems for Comfort Air Conditioning brings together all the material on central systems for heating, humidifying, cooling, and dehumidifying which before was scattered throughout the book. The material is presented in such a manner as to apply directly to the requirements set forth in the application Code of Minimum Requirements for Comfort Air Conditioning which was adopted by the Society in January, 1938.

Information concerning heat transfer surface coils for summer and winter applications, which had not received special attention in previous editions, is presented in a special chapter intended to give the latest information available on this type of equipment. The Association finds there is a wide variety of methods now in use for selecting heat transfer coils and it is impossible to give specific recommendations for the proper choice of coils until additional research has been completed. Charts are included, however, which indicate the performance of coils operating under varying design load and equipment conditions.

The committee which prepared the Guide this year recognized fuels and their combustion as an important factor to the heating engineer and has included a completely revised chapter on fuels. Principles of combustion and related factors dealing with flame temperature and proper air requirements are given special consideration. The latest current information on classification of all types of fuels is given along with suggested methods of firing to obtain best results.

The chapter on Heat and Fuel Utilization has been rewritten. Methods are outlined for estimating fuel consumption based on calculated heat losses and degree-day factors. Charts are included for coal, oil, and gas whereby fuel burning rates may be estimated for various design loads and operating efficiencies.

Other chapters have been rewritten for this edition, including those on Air, Water and Steam; Cooling Load; Radiators and Gravity Convectors; Steam Heating Systems; Piping for Steam Heating Systems; Mechanical Warm Air Furnace Systems; Unit Heaters, Ventilators, Air Conditioning and Cooling Units; Natural Ventilation; and District Heating.

A revised table giving the weights of saturated and partially saturated air for various psychrometric pressures has been added this year to bring the data in conformity with government standards.

Copies of the *Heating, Ventilating, Air Conditioning Guide 1939* are available from the American Society of Heating and Ventilating Engineers, 51 Madison Avenue, New York, at $5.00 each.

Australian Association Studies Chemical Standards

Methods of sampling and analysis of coal and coke and methods of testing liquid fuels, prepared by the Australian Chemical Institute, are being considered for approval by the Standards Association of Australia.

The Association is also considering a request for a standard to define and control the use of the term "Chemically pure." The Association's Chemical Industry Committee, which considered the request, reported that a careful study would be necessary before any recommendations could be made. The term was regarded as intrinsically unsound in relation to commercial practice, the committee's report said, because of the impossibility of classifying any product as being "chemically pure" and because of the varying degrees of chemical purity demanded for different purposes. It might be found to be desirable to prepare standard specifications for reagents and the like, with grades of purity for various purposes, the committee suggested. It was also suggested that it might be possible to overcome the difficulties involved in the use of such a term by adoption of a "standard mark" indicating compliance with some recognized standard of purity.

Australian Report On Vertical Boilers

A report on vertical boilers which may be used in a revision of the Code for Boiler and Unfired Pressure Vessels of the Standards Association of Australia has just been received by the ASA. Copies will be loaned to anyone interested.

Safe Exits for Office Buildings Included in Building Exits Code

Fifth edition of Building Exits Code describes how to provide safe exits for emergencies in schools, department stores, factories, hospitals, hotels, office buildings, and public assembly places

Office buildings are included for the first time

by

Robert S. Moulton[1]

Secretary, Sectional Committee on the Building Exits Code

OFFICE building exits are covered in a new chapter of the American Standard Building Exits Code in the fifth edition recently completed by the National Fire Protection Association as sponsor, and approved by the American Standards Association. As in the case of previously developed chapters of the Code, the provisions for office building exits are coupled with various requirements for construction and arrangement of buildings and other details which are considered necessary by the committee to assure the safe use of exits in case of fire or other emergency calling for prompt escape.

Considerable hazard to life, even in modern, fire-resistive office buildings in large cities, was found by the committee during its consideration of the new chapter. Generally, the committee found, all the exits of office buildings discharge through a street floor lobby or foyer. Opening into that lobby are drug stores, men's furnishing stores, hat cleaning shops, and other stores which may offer material for a rapid-burning fire, giving off smoke or fumes. Should all the occupants of the upper floors of a building find it necessary

[1]Technical Secretary, National Fire Protection Association.

Courtesy National Fire Protection Assn.

Outstanding loss of life was caused by inadequate exits in the Detroit Study Club fire in 1929. The two exits provided were useless. Flame coming in one effectively cut off the other. Twenty-two were burned to death or suffocated. Those who did escape climbed through a window from a small room at the other end of the dance hall and slid down a telegraph pole.

Fire escapes are not recommended by the Building Exits Code. This picture shows how fire and smoke bursting from the windows may make them a hazard rather than a protection.

Courtesy National Fire Protection Ass

to make their exit through the first floor lobby, with a fire burning in one of these stores, the result might be most serious, even in a building of fire-resistive construction.

As a result of these findings, the new section on exits for office buildings provides safeguards for such emergencies by recommending a cut-off between the lobby and the stores on the first floor of the building, or emergency exits leading directly out of the building and not through the main elevator lobby.

The number and width of exits are determined according to a formula based on the number of people occupying the building per square foot of gross floor area. Outside stairs or fire escapes are not permitted for new buildings, but certain types of outside stairs are permitted for existing buildings not exceeding six stories, or 70 feet, in height.

New office buildings of wood frame construction, the Code provides, shall not be higher than three stories; buildings with masonry walls and joist construction, four stories; the same buildings with the first floor of fire-resistive construction and the basement, heating plants, and other combustible sections effectively cut off, six stories; heavy timber construction with basement sprinklered, six stories. For the purposes of this Code there is no limit to the height of office buildings of fire-resistive construction.

Existing buildings may be two stories higher than these limits if the building is completely protected by automatic sprinklers installed and maintained in accordance with the requirements of the National Fire Protection Association.

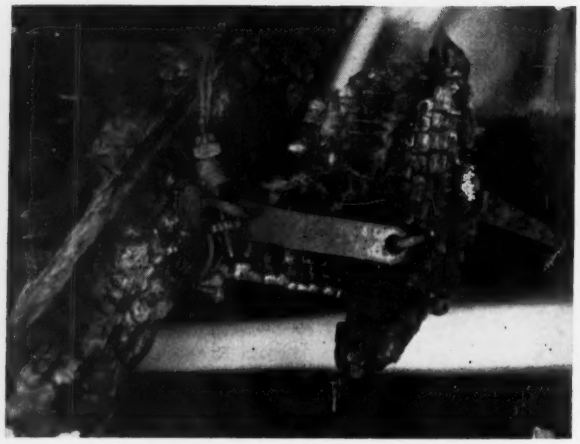
Arrangement of exits, and width of corridors and doors, as well as other provisions including lighting, alarms, and provisions for stairways, are in accordance with the general provisions already worked out to protect the lives of occupants of other types of buildings.

Code Is Widely Used

The Building Exits Code is coming into general use as a guide in building construction for the purpose of protecting life from fire hazards. It is an outgrowth of recommendations for the construction and arrangement of exit facilities prepared by the Committee on Safety to Life, which was organized in 1913 by the National Fire Protection Association. This work was undertaken following several fires in which many people lost their lives. In preparing the recommendations the committee carefully studied such well-known fires as those which destroyed the Binghamton Clothing Factory, the Iroquois Theatre, the Collinwood School, and the Triangle Shirtwaist Company factory, all of which brought about tragic loss of life.

The committee started its work with the theory that a number of factors have a bearing on the degree of hazard to life in a burning building, including the type of occupancy, whether the contents are relatively slow burning, of average combustibility or of an extra-hazardous nature. The presence or absence of sprinkler protection, the construction and height of the building, and other factors are also considered. The committee developed a formula for these various factors so that the number, width, and arrangement of exits will vary in proportion to the hazard. In order to accomplish this, it has found it necessary to study carefully not only actual fire experience, but also existing buildings with large population. To help in making its decisions, studies have been made by the committee of the rate of flow of crowds down stairways, through horizontal exits, and through other types of exits, and large scale fire drill tests have been conducted in many buildings.

In 1921 this committee was reorganized to qualify as a sectional committee of the American Standards Association, and the National Fire Protection Association became sponsor under the procedure of the ASA. Following its reorganization, the committee enlarged and extended its work, revised the standards already prepared, and developed recommendations for additional types of buildings. The Code now includes provisions for



Courtesy National Fire Protection Assn.

The Building Exits Code recommends safe practices as well as engineering requirements to prevent death and injury due to lack of proper exits. If these recommendations were followed this type of danger could not exist.

In this case—the Diamond Candy Company fire in 1915—combustible stock stored at its base cut off the main stairway. Another stairway was equipped with trap doors at floor levels installed as fire stops. One of the traps was locked by the crude mechanism shown in this picture. Employees spent 15 minutes in the early stages of the fire trying to open this door, then headed for an outside fire escape which was useless because of fire issuing from lower windows. Twelve either jumped or were burned to death.

schools, department stores, factories, hospitals, sanitariums and corrective institutions, places of public assembly, and hotels and apartment houses, in addition to the new provisions for office buildings.

The purpose of the Code is to specify what number, size, and position of exit facilities will be sufficient to empty buildings promptly in case of fire or other emergency. It also attempts to recommend the type of construction and protection for buildings which will help prevent danger to life from fire, smoke, or panic before buildings are emptied.

One of its fundamental principles is that there shall always be two available means of egress, so located as to be quickly and conveniently accessible and available for use at all times when the building is occupied. This usually calls for two or more stairways or doors so located that the maximum travel to reach them will not be over a maximum distance varying between 75 and 150 feet according to the hazard of the occupancy and the character of the construction and protection.

Extensive tests have been made to determine how wide stairways should be, and a unit of 22 inches for one file of persons descending the stairs has been determined upon. The Code specifies the width of stairways in 22-inch units, according to the number of occupants of a building. Ordinarily a minimum width of two units, or 44 inches, with some permissible deductions for projecting hand rails or door jambs is required. Other principles on which the recommendations of the Code are based are: All stairways should be enclosed with walls and partitions having a degree of fire resistance at least sufficient to keep out any fire for an ample time for complete evacuation of the building. All doors should swing toward the outside and should be kept unlocked at all times when the building is occupied. Signs and lighting should be properly arranged.

Fire Escapes May Be Dangerous

Fire escapes have been one of the outstanding problems of the committee. In previous years it has been thought that if fire escapes were provided all danger to life from fire would be eliminated. The committee, however, considers that they should be used only where necessary in existing buildings and not as an approved means of exit for new structures. Fire escapes, frequently flimsy and precipitous, unshielded against fire in the structure to which they are attached and terminating on balconies high above the ground level, may be a menace rather than a safeguard, and may give a false sense of security.

Many examples can be cited by the committee to show that outside fire escapes are often useless, for instance, in the case of the Binghamton Clothing Company fire. This was a four-story manufacturing building which took fire on the ground floor. It was equipped with non-standard inside stairs and a flimsy wood and steel set of outside stairs unprotected from fire in the building. Fire sweeping up the stairs forced the workers on the top floor to fall back to the fire escape, but they found it worse than useless. The windows were flooding it with flame and smoke. There was nothing for them to do but await roasting or leap four stories to a hard pavement.

The Code permits the use of outside stairs only in existing buildings not exceeding six stories or 70 feet in height, and provides that they shall not constitute more than 50 per cent of the required exit capacity. Outside stairs are not to be used on new buildings.

A common defect of so-called "fireproof" buildings is a stairway which, though it may be cut off at floor levels, has no door at the bottom to keep out smoke and flame from street floor or basement fire.

The Hotel Plaza in Jersey City, N. J., was such a building, and when a Christmas Tree fire occurred on December 29, 1937, all doorways between floor areas and one flight of stairs were clipped open. Of the four persons who were killed two were in the lobby when the fire started. One each was suffocated on the sixth and seventh floors.

Courtesy National Fire Protection Assn.

It specifies carefully the type of outside stairs permitted by the Code for use on existing buildings, basing its recommendations on the idea that fire escapes are used only in emergencies. They should, therefore, be made with risers, treads, handrails, etc., most suitable for carrying many people in a hurry. The Building Exits Code requires that outside stairs conform substantially

Representative Committee Continually at Work

Safety requirements for building exits are continually being brought up-to-date. A representative committee of organizations concerned with various phases of the problem of providing safe means of exit developed the present Code and is again working on suggestions for revising it.

This committee, working under the leadership of the National Fire Protection Association, has the following membership:

Francis R. Scherer*, National Council on Schoolhouse Construction, *Chairman

Robert S. Moulton*, National Fire Protection Association, *Secretary

National Fire Protection Association, *C. E. Beach, Clarence Heller, R. S. Moulton*
American Institute of Architects, *John Irwin Bright, George Idell*
American Institute of Consulting Engineers, Inc., *Rudolph P. Miller*
Building Officials Conference of America, *E. M. Goodman*
Federal Housing Administration, *Howard P. Vermilya*
Illuminating Engineering Society, *R. E. Simpson*
International Association of Fire Chiefs, *Ross B. Davis*
International Association of Governmental Labor Officials, *Sheldon W. Homan*
International Association of Industrial Accident Boards and Commissions, *James L. Gernon*
National Association of Mutual Casualty Companies, *S. E. Whiting*
National Automatic Sprinkler Association, *Henry B. Cross, Henry A. Fiske (alt.)*
National Board of Fire Underwriters, *C. T. Bissell*
National Conservation Bureau, *W. S. Paine, James L. Keane (alt.)*
National Council on Schoolhouse Construction, *Francis R. Scherer*
National Fire Protection Association—Fire Marshals Section, *Sherwood Brockwell*
National Lumber Manufacturers Association, *Richard G. Kimbell*
National Safety Council, *W. D. Keefer, L. R. Palmer*
Railway Fire Protection Association, *W. E. Cathcart*
Underwriters' Laboratories, Inc., *S. V. James*
United States Department of Commerce, National Bureau of Standards, *Nolan D. Mitchell*
U. S. Department of the Interior, National Park Service, *Frank L. Ahern*
U. S. Department of Labor, *Phillip Kapp*
Western Actuarial Bureau, *R. E. Vernor*

to the requirements for inside stairs, having solid treads and standard risers and width.

The provisions of the Building Exits Code are recommendations only, but it has had a strong influence in determining the trend of building codes and other requirements providing safety to life from fire. It has been adopted by reference in several states, and its requirements for school exits have been adopted in the PWA standards for school building construction.

It gives detailed requirements for stairways, doors, ramps, aisles and corridors, horizontal exits, elevators and escalators, outside stairs, slide escapes, alarm systems, drills, signs and lighting, and other features. The application of these general provisions is given in chapters with specific requirements for schools, department stores, factories, hospitals, sanitariums, and corrective institutions, places of public assembly, hotels and apartment houses, and office buildings.

The fifth edition of the Building Exits Code (A9-1939), approved by the American Standards Association in January, is now available at 75 cents per copy.

Lack of Standards Helps to Cause Trade Barriers Between States, Committee Tells Conference

The committee on agriculture of the National Conference on Inter-State Trade Barriers, which met at Chicago during the week of April 3, reported that lack of standards was causing much of the confusion and discrimination against products of the several states.

"Confusion, misinformation, and discriminations against products of the several States are caused in large measure by the lack of uniform standards of grading, packing, marking, and labeling of products," the report said. "The barriers to interstate trade so built have become, in many instances, a direct burden both upon the producers of wholesale products, and the consumers of such produce. This condition can be remedied only by the action of the several States in the adoption of like standards of grading, packing, marking, and labeling."

The committee recommended that the Association of State Marketing Officials confer with the U. S. Department of Agriculture "in the drafting of model legislation to make uniform the law of the several States concerning the grading, packing, marking, and labeling of food products and foods according to standard grades, accepted as such by the United States Department of Agriculture."

The National Conference on Inter-State Trade Barriers, which received the report, went on record as being in favor of the preamble to the Constitution of the United States. "This is a clear gain," says P. H. Erbes, Jr., who reported the meeting in *Printers' Ink*, "inasmuch as most of the State laws restricting interstate trade violate the letter as well as the spirit of the Constitution."

In a second resolution the meeting expressed the opinion that interruption of the free flow of commerce among the States places a burden on the consumer and lowers standards of living. A third urged repeal of all retaliatory legislation and the establishment of machinery for adjusting grievances among the States by consultation rather than immediate resort to legislative revenge.

Port-of-entry systems, manned by State police and tax officials, it was reported, are now established at the borders of eleven States. Kansas has 66 ports, Oklahoma 58, Nebraska 31, New Mexico 22. Thirty-one States now enforce one or more laws compelling preference for made-within-the-borders products.

Standardization Frees From Routine

"Standardization is opposed in some quarters on the ground that it interferes with individual freedom of action and choice. This is largely a misapprehension. Industrial standardization, properly carried on and wisely controlled, is the liberator which relegates problems that have already been solved to their proper place—the field of routine—leaving the creative faculties of the engineer, the architect, the chemist or the designer free to tackle the problems still unsolved. Standardization is, in fact, a handy tool; it must be made our servant and not allowed to become our master."—*C. LeMaistre, Director, British Standards Institution. From an article in "Industry, Illustrated," February, 1939.*

Building Code Committees Show Work Is Progressing

THE Building Code Correlating Committee held its annual meeting April 10, and received reports of the 14 technical committees working under its jurisdiction.

These reports show that draft standards are now being considered by the committees on light and ventilation, reinforced gypsum concrete, and administrative requirements for building codes. Recommendations for structural steel and for welding have been prepared, and draft standards on fire protection and fire resistance, and on chimneys and heating appliances are now under way.

A proposed specification on Portable Steel and Wood Grandstands was accepted recently by the ASA committee on that subject. Subcommittees of the ASA committees on excavations and foundations and minimum design loads are actively at work.

A new ASA committee on Wood, which was authorized recently, is being organized.

The work being done by the committees under the jurisdiction of the Building Code Correlating Committee is shown in the following reports of the committees, which were presented by the organizations taking the leadership in the work in each case:

Building Exits Code (A9)—Several revisions of the Code are now being considered by this committee.—*National Fire Protection Association.*

Building Code Requirements and Good Practice Recommendations for Masonry (A41)—The actual drafting of a new standard was deferred until ASTM Committee C-12 on Mortar for Unit Masonry offered a classification of mortar strengths. This ASTM committee has now voted to publish for information a draft of a proposed specification for mortar which includes a four-way strength grading of mortar.—*U. S. Department of Commerce, National Bureau of Standards.*

Building Code Requirements for Fire Protection and Fire Resistance (A51)—The National Board of Fire Underwriters is preparing a text for a report to be used as the subject for discussion between the representatives of the three sponsors. Part I of the Report will be the Introduction. Each of the nine chapters of Part II treats a topic specifically enumerated in the scope of the project. The draft for the Introduction and the first seven chapters of Part II has been prepared.—*National Board of Fire Underwriters; National Fire Protection Association; U. S. Department of Commerce, National Bureau of Standards.*

Building Code Requirements for Chimneys and Heating Appliances (A52)—An outline has been prepared for a report on this project. Each of the four chapters of the report treats a topic as specifically enumerated in the scope. A draft for construction requirements for chimneys and fireplaces has been prepared; and one on special construction for smokestacks or flues for steam boilers and other furnaces, and location and protection of smoke pipes is partly prepared.—*National Board of Fire Underwriters.*

Building Code Requirements for Light and Ventilation (A53)—The committee reviewed at two meetings the 313 comments on the first tentative draft of this proposed standard. As a result, a second draft of Requirements for Light and Ventilation is now being prepared and it is intended to send a mimeographed copy of this draft to all members of the sectional committee not later than May 1, 1939.—*Federal Housing Administration; U. S. Treasury Department, Bureau of the Public Health Service.*

Building Code Requirements for Fire Extinguishing Equipment (A54)—The NFPA Regulations on Automatic Sprinkler Equipments are undergoing a complete revision of a major character, including a number of fundamental changes. Pending the completion of these regulations, which will unquestionably form the basis of any building code requirements that may be drafted on this subject, any special activity on building code requirements for fire extinguishing equipment would not appear to be in order.—*National Fire Protection Association.*

Administrative Requirements for Building Codes (A55)—At a meeting of the sponsors in 1937 it was decided to adopt the Chapter on Administration contained in the Recommended Uniform Building Code of the New England

Building Officials Conference. A copy of this chapter was sent to all members of the sectional committee on May 27, 1937, with instructions concerning the way in which criticisms should be made. More than 120 different criticisms were received.

A second edition of the chapter was sent to members of the ASA committee in June, 1938. Almost 100 different criticisms were received. Well-attended meetings of the committee were held in October, 1938 and February, 1939, and formal action was taken on each criticism. The sponsors are at present working on the third edition of the Chapter on Administration.—*American Municipal Association; Building Officials' Conference of America; Pacific Coast Building Officials Conference.*

Building Code Requirements for Excavations and Foundations (A56) — Seven subcommittees—on Excavation, Shoring and underpinning; borings, tests, and bearing value of soils; spread footings; general design; piles; piers, caissons and cylinders; and settlement and lateral motion records of completed structures—are all fully organized and actively working. All subcommittees submitted preliminary reports to a meeting of subcommittee chairmen in January, 1939. At that meeting it was decided to distribute the subcommittee reports to the committee as a whole in April, and to have a second meeting of subcommittee chairmen about the first of May.

The committee is making good headway. If matters progress as well as they have to date, the committee as a whole will probably be in a position to submit a preliminary report to the Building Code Correlating Committee late in the Fall. —*American Society of Civil Engineers.*

Building Code Requirements for Iron and Steel (A57)—This committee has presented to the Building Code Correlating Committee recommended specifications for structural steel and recommended clauses covering welding. The committee is now working on specifications for steel joists.—*American Institute of Steel Construction; American Society of Civil Engineers.*

Building Code Requirements for Minimum Design Loads in Buildings (A58)—The work has been divided among four subcommittees covering (1) dead loads; (2) loads resulting from furniture, equipment, and people; (3) wind loads; and (4) earthquakes. Each subcommittee has been collecting and studying available material in its field of interest.

Subcommittee 1 has been checking values for unit weights of materials through inquiries made to the National Bureau of Standards and to various manufacturing organizations.

Subcommittee 2 has been gathering criticism from its members on tentative live load values contained in a proposed code prepared in the Procurement Division of the United States Treasury Department. Certain portions, such as loads resulting from motor vehicles, are being reviewed in the National Bureau of Standards. The proposed structural code has been found to be of such general interest that copies have been mimeographed and distributed to all members of the committee.

Subcommittee 3 has received bibliographical material and an analysis of current code provisions from its chairman and is studying this. Translations of material from Dutch and Russian sources also are being put in shape to be considered by the members.

Subcommittee 4 has been supplied with bibliographical material and with a discussion of the general problems by its chairman, who has requested individual members to submit their ideas for draft requirements by April 15.

Copies of the report, Minimum Live Loads Allowable for Use in Design of Buildings, prepared by the Department of Commerce Building Code Committee, have been distributed to all members of the sectional committee for study. Selections from typical codes have been forwarded to each subcommittee for its information. At present, studies are being made of a general arrangement which will unify the various recommendations of the subcommittees. The members have also been canvassed for their attitude on certain load provisions contained in the standard submitted informally by the ASA committee on Building Code Requirements for Iron and Steel (A57).—*U. S. Department of Commerce, National Bureau of Standards.*

Building Code Requirements for Reinforced Gypsum Concrete (A59)—The personnel of this committee was completed in March, 1939. No meeting of the committee has been held, but the sponsors have prepared a suggested section on Reinforced Gypsum Concrete which has been submitted to the members of the committee with the request that comments be sent in not later than April 15, 1939. After the comments have been received and tabulated, a meeting will be called.—*Building Officials Conference of America; Gypsum Association.*

Building Code Requirements for Signs and Billboards (A60)—This committee is now being organized and it is expected that the organization will be completed very soon.—*American Municipal Association; Outdoor Advertising Association of America.*

Building Code Requirements for Wood (A61)—The sponsors of this committee have held several meetings to plan the organization of the committee and to consider the mechanism

for handling the work. It is expected that plans will be ready soon for actively organizing the committee. In the meantime the Forest Products Laboratory has given consideration to some phases of research as it applies to code requirements, and to the possible division of work in the preparation of the code.—*Forest Products Laboratory; National Lumber Manufacturers Association.*

Safety Code for Grandstands (Z20)—This committee has completed a draft of Specifications for Portable Steel and Wood Grandstands. The committee is operating under the autonomous sectional committee method of the ASA and it will be necessary before the specifications are submitted to the ASA for approval for one or more prominent national organizations in this field to formally endorse the proposals of the committee. A complete exhibit of the work of the committee, the vote by which the committee approved the specifications and all other pertinent material is now being assembled for consideration by the organization or organizations to be invited to serve as endorsing sponsors. It is contemplated that such an invitation will be extended to the American Society of Civil Engineers and the American Institute of Architects.—*Cyril Ainsworth, Secretary.*

Standard Industry Classification To Permit Accurate Comparison

"Substantial progress has been made during the past year on a standard industrial classification manual under the supervision of an interagency committee organized by the Central Sattistical Board. This manual will contain a detailed classification of the types of economic activity in which business concerns in this country are engaged, a description of the distinguishing characteristics of each industry, and a list of the principal operations and products of each industry.

"It is hoped that wide adoption of the standard classification will greatly increase the accuracy of comparisons among industrial data reported to different Federal agencies. It is now extremely hazardous, for example, to compare the data on corporate finances compiled by the Securities and Exchange Commission for a number of industries with the financial data published by the Bureau of Internal Revenue, because of differences in the scope of the industry groups used by the two agencies.

"The adoption of the standard classification by a number of the important statistical agencies would also make possible a reduction in the burden of statistical inquiries, since data collected by one agency could be used by others with less danger of serious error."—*From the Fourth Annual Report of the Central Statistical Board, July 1, 1937 to June 30, 1938.*

Standard Time May Affect Records in Sport Events

Standardization crashed into the field of sports last month when it was announced that the International Amateur Athletic Federation is trying to establish a "standard deviation" for time in track and swimming contests. The Federation proposes to recognize future record-smashing marks only when they exceed existing records by a fixed minimum figure, or deviation, set up to allow for error.

By using a pendulum which they clock daily to check the number of oscillations in a given time, the research committee of the Federation has found an average deviation of .082 seconds. This, they conclude, is due to human error in starting and stopping a stopwatch.

"We should deduct at least that much in the future when we establish records," said Floyd Rowe, physical education director of Cleveland schools and member of the Federation's research committee, who devised the pendulum method of checking the time. He recommended extensive tests with watches to ascertain what mechanical deviation may exist. "To get 100 per cent accurate results we'll have to adopt electrical timing devices clocking 1,000th of a second," he said.

Bakers Recommend Standards For Bread Pan Sizes

Standardization of pan sizes for bread baking finally became a reality when the American Bakers Association officially approved definite maximum pan lengths recently. The following pan lengths were recommended:

For a 12-ounce loaf, 9 inches
For a 16-ounce loaf, 10½ inches
For a 20-ounce loaf, 12 inches
For a 24-ounce loaf, 13½ inches

"Both the American Bakers Association and the American Society of Bakery Engineers have long stood behind the theory that pan size plays some part in turning out bread of the finest texture, flavor, and quality," according to *Food Field Reporter*, which reported the bakers' action in its February 6 issue.

British Standards Available from ASA

Copies of new and revised British Standards received recently from the British Standards Institution include:

New—

Cast-Iron Straightedges (Grades A and B) BS 818-1938

Grey-Cast-Iron conduit boxes for electrical wiring BS 820-1938

Iron castings for gears and gear blanks (Ordinary, medium, and high-grade) BS 821-1938

Density-Composition tables for aqueous solutions of sodium chloride and of calcium chloride for use in conjunction with British Standard density hydrometers BS 823-1938

Density composition tables for aqueous solutions of caustic soda for use in conjunction with British Standard density hydrometers BS 824-1938

Steel storage bins and racks BS 826-1939

Radio interference suppression for trolley-buses and tramways BS 827-1939

Terminal markings for electrical machinery and apparatus BS 822-1938

Mild steel shackles for lifting purposes BS 825-1939

Portable fuse and plug boxes (applicable to film studios, stages, music halls, etc.) BS 828-1939

Mild steel drums for inflammable liquids BS 829-1939

Winchester bottles BS 830-1939

Revised—

Phosphor bronze sheets, strip and foil BS 407-1939

Rubber insulated cables and flexible cords for electric power and lighting for working voltages up to and including 11 kv BS 7-1939

Steel tubular traction poles BS 8-1939

Tensile testing of metals BS 18-1938

Malleable cast iron and cast copper alloy pipe fittings (Screwed BSP taper thread) for steam, water, gas and oil BS 143-1938

Electric power switchgear for indoor and outdoor installations up to and including 220,000 volts BS 162-1938

Electric lamps for railway signalling BS 469-1939

Copies of these standards can be ordered through the American Standards Association. Please refer to the British Standard number when ordering a standard.

Paint Labels Needed, Association Is Told

Unless the paint industry begins labelling its products with their full formulas, fast-growing pressure from consumer groups will force not only labelling but standardization, announced Delancey Kountze, chairman of a special committee. Mr. Kountze spoke at the recent golden jubilee convention of the National Paint, Varnish and Lacquer Association at Atlantic City. He recommended that "formula labelling in simple terms be universally adopted by members of this industry."

"Consumer pressure has been developing rapidly," he said. "Demands in increasing volume from consumers for some standardization or quality certification must be recognized. In the absence of some voluntary action, other steps will be taken through Federal or State laws."

These laws, Mr. Kountze said, would be stringent and would inevitably include standardization. "This would be destructive," he continued. It would permit regimentation of future formula procedure, and in effect it would take away from each manufacturer the right to continue to formulate his products as he sees fit. Any plan of grading based on the ingredients would result in the long run in each manufacturer making practically an identical product, leaving little or nothing but price competition. And any attempt to grade on the basis of actual performance would be almost impossible."

He concluded, "the consumer is interested in how the paint looks and acts on his building. No matter how good the paint, the manufacturer cannot guarantee the final results, for too many things can happen between the paint can and the finished job. Formula labelling is the manufacturer's guarantee of the contents of the can, and this is as far as he should or can go."

ASTM Changes Method Of Publishing Standards

A new method of publishing ASTM standards and tentative standards will become effective in November, 1939, the American Society for Testing Materials announces. Henceforth, all standards and tentative standards will be issued in one triennial publication, divided into three parts: Part I, Metals; Part II, Non-Metallic Materials—Constructional; and Part III, Non-Metallic Materials—General. Publication of new and revised tentative standards in the annual Proceedings, Part I, will be discontinued. The Proceedings, including both committee reports and papers, will be bound in one volume. The publication of the annual *Book of Tentative Standards* will be discontinued entirely.

In the two years between triennial publication of the new Book, supplements to each of the three parts will be issued, containing revisions and new or revised standards and tentative standards for that year. Since these books will be appreciably larger than the present supplements and will have permanent reference value, they will be bound in cloth. The volume on Methods of Chemical Analysis of Metals published in 1936 will be continued as a separate publication.

by

James A. Jackson[1]

Member of Sectional Committee on Rotation, Connections, and Terminal Markings for Electric Power Apparatus

American Standard Terminal Markings Now Available in 1938 Revision

Extensive changes clarify and extend marking rules to additional types of motors, make radical changes in single-phase motor terminal markings, and extend rules to cover arrangement of blades and slots of attachment plugs and their receptacles

THE need for standard terminal markings was recognized prior to 1919. In that year the Electric Power Club agreed on certain markings and adopted them as a standard for their industry. These standards with some changes and additions were first recognized as American Standards by the American Engineering Standards Committee in 1925. Extensive use of these standards, together with invention and advancement in the art of designing and building electrical machinery, showed up defects and omissions as is often the case. This necessitated a revision and in 1936 and again in 1938 changes were made, being dictated by usage and progress in the art. The purpose of this article is to explain what was accomplished in these two latest revisions and some of the reasoning behind the changes. The subject matter will be treated under four headings:

1. Rotating Apparatus
2. Transformers (including Reactors)
3. Voltage Regulators
4. Attachment Plugs

Rotating Apparatus

The first thought of the subcommittee handling this section was—how could terminal markings for rotating machinery be of the greatest value to both the manufacturer and user of electrical equipment—recognizing that the interests of the two were more or less divergent?

The principles laid down by the committee were:

First—wherever possible the system of terminal markings used for any particular line of machinery should indicate as far as possible the electrical relations between the several circuits within the machine. When this can be done, it enables one who understands the system to know the internal connections of the machine to a degree which permits him to make the external connections without the aid of a wiring diagram.

Second—the system used should, wherever possible, be of such a nature that terminal markings for a certain line of machinery (polyphase induction motors, for example) may be determined accurately by the designing engineer for any new type of winding or number of internal circuits he may care to use regardless of how many leads are brought out of the machine. This in some cases was accomplished by using rules for determining markings, which rules have sufficient flexibility to enable the terminal markings of new and unusual windings to be determined without the necessity of adding new standards each time such a machine is brought out.

[1]Machinery Manufacturers Section, Industrial Department, General Electric Company, Schenectady, N. Y.; representative of the National Electrical Manufacturers Association on the ASA committee on Terminal Markings.

NEMA Heads ASA Committee On Terminal Markings

The revised American Standard Rotation, Connections, and Terminal Markings for Electric Power Apparatus (C6-1938) was developed under the leadership of the National Electrical Manufacturers Association. Members of the ASA committee in charge of the revision were:

L. F. Adams*, National Electrical Manufacturers Association, *Chairman

C. M. Cogan*, National Electrical Manufacturers Association, *Secretary

National Electrical Manufacturers Association, *L. F. Adams; G. H. Garcelon, J. A. Jackson, H. F. McRell, R. O. Watson, A. C. Farmer (alt.), H. H. Watson (alt.)*

American Institute of Electrical Engineers, *R. R. Lawrence, R. W. Owens, John B. Taylor*

American Transit Association, *Charles Rufus Harte, R. H. Stier*

Electric Light and Power Group, *E. A. Hester, E. B. Shew, J. O'R. Coleman (alt.)*

U. S. Department of Commerce, National Bureau of Standards, *H. B. Brooks*

Copies of the revised standard are available from the ASA at $1.00 each.

Third—in some cases theoretical reasons which might be used for determining terminal markings were discarded in favor of markings which would simplify manufacturers' shop practice, particularly where this was in the interest of economy, provided the markings so determined had no disadvantages from the users' standpoint.

Commenting on the revised terminal markings, it was found that the principles could not be adhered to rigidly, hence some compromises were necessary. When these situations arose, the first thought was—what is the most logical compromise? This viewpoint prevented the selection of terminal markings at random, picked out of thin air so to speak, and is the best assurance that the markings will stand the test of time and avoid frequent revisions.

In the 1936 revision, the major change was in stator terminals for three-phase induction motors where a set of rules for determining the markings was substituted for the former method of showing every type of winding with the correct terminals marked on it. The flexibility of these rules is such that the correct terminal markings for any kind of a stator winding may be readily determined by applying the rules. In this way it is a distinct improvement over the old method which required periodic extension. Other 1936 revisions were of a minor nature and were confined largely to the general rules for Rotation, Connections, and Terminal Markings.

Many Machines Covered

The changes made in the 1938 edition were much more extensive in that many types of machines were covered. Terminal markings for the stators of two-phase motors, a-c generators, and synchronous motors were covered by rules almost identical to the rules included in the 1936 edition for three-phase motors. A few explanatory tables and notes were added to all the rules, including three-phase motors, to clarify them and to show definitely how to connect multi-speed motors to the line for each speed. These changes sound rather formidable but a study shows that the markings derived from these rules do not differ materially from those previously used for most standard machines. There are some differences in the markings for more complicated machines such as multi-speed motors but sales of these machines are small compared to the simpler machines. The idea has been to obtain logical markings and a flexibility which will take care of the future without more or less frequent revision.

Single-phase motor terminal markings were changed rather radically. These motors presented a perplexing problem because some resembled d-c motors, some a-c polyphase motors, and others resembled a cross between the two. Moreover, the introduction of all the various types of single-phase motors extended over a long period of years and terminal markings for them were selected at random, usually by the company which developed each particular type of motor. The markings therefore "just grew" like the proverbial Topsy.

To bring order out of this chaos, the committee agreed on certain principles to be followed in determining the markings of single-phase motors:

First—**Make the markings and diagrams clearly distinguish single-phase motors from all other motors when practical to do so.**

Second—**Arrange subscript numbers so that where high and low voltage connection leads are brought out, the general practice of connecting odd to odd and even to even for low voltage (parallel connection) and odd to even for high voltage (series connection) will be adhered to.**

Third—**Always represent the rotor by a circle on schematic diagrams of single-phase motors even though there are no external connections. This indicates definitely whether it has any connections (short circuits or external) and also distinguishes the diagram from other a-c motors which seldom show the rotor.**

Each type of motor is shown by a diagram with the correct terminal letters and subscript numerals. The committee is now working on a further ex-

tension to include terminal markings for the auxiliary apparatus (capacitors, transformers, relays, contactors, etc.) used with capacitor motors.

Under synchronous converters only one minor change was made to add markings BF1 and BF2 to booster field windings.

Transformers (including Reactors)

It seemed most desirable to eliminate the terms "primary", "secondary", and "tertiary" as previously used because of the confusion resulting from inconsistent use of these terms by the industry. In some cases the term "primary" has meant the highest voltage winding in the transformer, while at other times it is used for the winding to which power is supplied. These terms have therefore been dropped and the windings are referred to by numbers in which number 1 always is the highest voltage winding. Also, letters have been assigned for the terminal markings of each winding as follows:

Winding Number	*Terminal Marking Letter*
1	H
2	X
3	Y
4	Z

Certain inconsistencies were corrected and a few other minor changes which seemed desirable were made in this section. Information regarding polarity and the marking of terminals for instrument transformers and for numbering the leads of current limiting reactors were also included. All these changes appeared in the 1938 revision.

Voltage Regulators

Terminal markings for single and polyphase slip type voltage regulators was included for the first time in the 1938 revision.

Attachment Plugs

There also appeared for the first time in the 1938 revision, a standardization on the arrangement of slots and blades for polarized and non-polarized attachment plugs and receptacles.

Revised Specifications For Concrete Pavements

A revision of the Standard Specifications for Portland Cement Concrete Pavements was issued recently by the American Public Works Association. Two alternate methods of proportioning a concrete mix are included in the specifications, the water cement ratio, and a designed mixture for a specific unit cement content. This is but one of the outstanding features included in this standard, which covers every phase of concrete pavement construction.

Copies are available from the American Public Works Association, 1313 East 60th Street, Chicago.

Safety for Engine Rooms In New Ship Construction

Changes in safety standards for engine rooms and machinery in new ship construction were recommended to the Accident Prevention Bureau of the Pacific Coast Marine Association recently. Among these changes were the following provisions:

1. Where possible, bolts and nuts should be so installed as to minimize tripping hazard.
2. An access ladder shall be provided at each manhole in all double bottom tanks which exceed 36 inches in depth.
3. Railings shall be installed on both sides of stairways and shall extend not less than 12 inches horizontally beyond the nosing or ledge of the lowest tread.

Specifications Replace Individual Whim

"Those who are inclined to find fault with the requirements of modern specifications for materials often have no realization of the situation that existed before the formation of the organizations responsible for formulating these specifications. Before these organizations existed each buyer was a law unto himself, and the seller who wished to obtain a share of the business offered was obliged to conform as best he might to the requirements of the individual customer.

"Details of these private specifications frequently were dictated by whimsies of the buyer's employees; restrictive clauses were introduced that called for special materials unsuited to other customers' requirements; and worst of all, the properties demanded of the materials often were fixed, not by what could and should be supplied for the particular article, but by what the buyer's staff mistakenly supposed the properties of a suitable material should be."—*From an article by John Howe Hall, Philadelphia, in "The Foundry," March, 1939.*

ASA Consumer Goods Committee Elects Max Gertz Chairman

THE Advisory Committee on Ultimate Consumer Goods elected Max Gertz, merchandise manager of B. Gertz, Inc., as chairman and Ruth O'Brien, chief of the clothing and textiles division of the U. S. Bureau of Home Economics, as vice-chairman at its meeting April 24. Mr. Gertz, who represents the National Retail Dry Goods Association on the committee, succeeds Harold W. Brightman of L. Bamberger & Company as chairman. Miss O'Brien represents the American Home Economics Association.

Activity was reported by several of the committees working under the jurisdiction of the ACUCG. At a meeting of the ASA committee on Standardization of Sizes of Children's Garments and Patterns April 26, Miss O'Brien presented a report of statistics compiled as the result of measurements taken of 145,000 children. These statistics may be used as the basis for a new method of sizing children's garments. A technical committee representing manufacturers, distributors, and consumers was named by the sectional committee to meet at the Bureau of Home Economics at Washington during the week of May 1 to study more closely these statistics. Another meeting of this sectional committee has been called for May 17.

Several subcommittees of a committee on Standards for Bedding and Upholstery have been organized, and drafts of requirements for certain types of filling materials have been prepared. Subcommittees on sterilization and methods of test are actively at work.

Suggestions that standards for drycleaning, rug cleaning, and laundering be prepared have been received by the Advisory Committee and a subcommittee is now studying the desirability of establishing standards for drycleaning.

A subcommittee is also studying the possibility of developing standards for shoes.

Market Survey Authority Analyzes Consumer Standards Problems

"THERE can be no argument against scientific standards except the old, and basically vulnerable, ones of cost and nonconformity to precedent," Paul T. Cherington, authority on market surveys and public relations, told the Advisory Committee on Ultimate Consumer Goods at its meeting April 19.

There are three distinct jobs in helping the consumer movement to reach some useful destination, he said:

"To put an increasing number of mechanical or technical specifications for consumer products on a scientific basis.

"To develop, in many cases, a wholly separate set of specifications equally scientific but worked out from the consumer's own point of view, based on performance, and expressed in the consumer's own language.

"To adjust producing and distributing processes so that they recognize these performance-specifications, while at the same time they reconcile these with such mechanical or technical specifications as are indispensable."

In the first job—technical specifications—good progress has been made, Mr. Cherington said. In the more difficult tasks of developing performance specifications and of relating the more scientific structural specifications to these, the consumer is still far from the goal, however, he believes.

The real solution of the problems involved in the "Consumer Movement," he said, lies in:

"A clear recognition of the importance of technical standards covering intrinsic properties;

"In a similar recognition of the presence of consumer standards based on personal satisfactions; and

"In an acceptance of the existence of a frequent need for translating one of the sets of specifications into the other, or for at least relating them to each other, so that both buying and selling may be more factual and more satisfactory."

Children's Measurements Studied For Standard Clothes Sizes

REPRESENTATIVES of consumer, retailer, and manufacturer organizations met April 26 as a committee of the American Standards Association to discuss the development of an American Standard System of Sizes for Children's Garments which will make it easier for the customer to order and obtain garments that fit, thus cutting down the volume of returned goods that contribute to the retailers' cost of doing business. Mrs. Harriet R. Howe, American Home Economics Association, is chairman of the committee.

Ruth O'Brien, chief of the textiles and clothing division of the U. S. Bureau of Home Economics, opened the meeting with a report on the research project just completed by the Bureau.

"In February, 1937," she said, "the Works Progress Administration provided funds for a study of those body measurements of children which are used in the construction of patterns and ready-to-wear clothing. On March 1, 1939, when the measuring was completed, 147,088 boys and girls 4 to 17 years of age had been measured. They were taken from both the higher and lower economic levels in 15 states."

Even before the research had been completed the Bureau's statisticians were at work tabulating results and charting out correlations between the various body measurements. "Very early in the study," reported Miss O'Brien, "it became apparent that the present practice of basing the sizes of children's garments on age is unsound and is one of the chief causes of the difficulties consumers and distributors have in selecting well fitting children's garments." For instance the Bureau found children from 4 to 13 years of age that had the average height and hip measurement given for a size 8.

"From a practical point of view, the problem of sizing is one of selecting that measurement or combination of measurements which will best predict the other body dimensions of a child." The work of the Bureau indicates that height, weight, hip-girth and chest-girth are all highly correlated with

Courtesy of U. S. Bureau of Home Economics

A six-year-old boy tries on two pairs of coveralls, both size 6. The measurement project showed that a combination of a height and a width measurement will predict accurately all the other measurements of the body. Age is of little use as a guide to size.

the other body measurements and that age stands at the bottom of the list. Hence, "if only one measurement is used for the sizing of garments, one of these four might well be chosen." However, the body consists of two structures, bony and fleshy; and consequently a height and width in combination are needed in order to predict accurately the various other body dimensions. Addition of a third measurement, the Bureau found, did not add appreciably to the accuracy of the result.

"From a practical point of view 'stature—girth of hips' probably constitutes the best index to replace age," she said, "because both measurements can be made simply, at home, with a common tape measure. Furthermore, use of this pair as a size index provides a check on the correct dimensions of the garment itself." Stature-weight requires two instruments to do the measuring and provides no adequate check on the size of the garment. The third pair are not quite as highly related to other body measurements as the first two, according to the Bureau's report.

At the close of the report the meeting was thrown open for discussion. In view of the volume and complexity of the data which two years' research has yielded, the Committee voted to appoint a technical subcommittee to make a close study of the findings of the measurement project and report back to it within two weeks. Appointed to serve on it were the following members:

W. R. Waters, W. T. Grant Co., representing the Limited Price Variety Stores, *Chairman*
Roy A. Cheney, Underwear Institute
J. J. Lubell, Schleifer & Lubell, Inc., representing the United Infants' and Children's Wear Assn.
Julia McHugh, Sears Roebuck & Co., representing the National Retail Dry Goods Association
W. H. Bingham of R. H. Macy, representing the National Retail Dry Goods Association
Mrs. E. Robinson, Montgomery Ward & Co., representing the National Retail Dry Goods Assn.
Mrs. Harriet R. Howe, American Home Economics Association
Alice Edwards, American Home Economics Assn.
Harry Simons, Garment Technical Institute
P. C. Cavanaugh, Cavanaugh Form Co.
Norman R. Oliver, Vogue Pattern Service

This subcommittee met at the Bureau of Home Economics in Washington May 1st. After careful study of the tables prepared by Meyer A. Girshick, who is in charge of the statistical part of the work, the committee recommended that he proceed with his tabulation of measurements using the height-hip combination as the basis. The subcommittee will meet again May 12 to continue its work and to formulate recommendations for the ASA Committee on Standardization of Sizes of Children's Garments. A meeting of this general committee has been called for May 17.

First National Conference Meets To Discuss Consumer Education

MORE than 500 men and women from 38 states met at Stephens College, Columbia, Missouri, to attend the first National Conference on Consumer Education April 4-6. Business and advertising groups as well as consumer and educational groups were represented.

Consumer education is a "national necessity," Harold S. Sloan, executive director of the Alfred P. Sloan Foundation, Inc., told the delegates at the opening session, which struck the keynote for the Conference.

"Should business favor or oppose consumer education?"; "Are the educational influences of advertising good or bad?"; "The work most needed in the next five years"; and "How is consumer education related to other subjects?" were problems considered during the three day meeting.

Standards have important place in conference between manufacturers, advertisers, educators, and consumers

The importance of standards in consumer education was particularly emphasized and action urged by D. E. Montgomery, Consumers' Counsel of the Agricultural Adjustment Administration. He asked: Can the machine age produce goods by large scale methods for sale to consumers who know what they are buying?

"To hope to send Mrs. John Brown with a family of five and a pocketbook for four to cope

single-handed with the mysteries of 10,000 brands and the whole world commercial practice is preposterous," he said. "What she needs and is entitled to get is the development of simple informative and useful standards for all the important things she buys. Then she may buy wisely without having to become a master technician. As standards become available she will indeed need education in what they are and how to use them for the relief of her personal buying problems.

"There are other aids available on the shopping front. One is consumers' cooperation by which inexpert consumer buyers get together and pay their managers and their wholesale buyers to do the job for them . . .

"Another kind of shopping information is supplied by the testing and rating services. I refer to those which operate on the basis of consumer subscription and are not engaged in selling anything to consumers except the informational services. Here there is judgment involved as well as the application of a standard . . .

"These are aids to better buying. They do not dispense with the need for standards. On the contrary they recognize that need in their own work and are asking for standards. So are we all, and so we have been asking, these many years. Just whom are we waiting for to say 'When'? Clearly something more than education is needed on this standards question, and that is action. We all know that standards are desirable, most of us believe them practicable. Voluntary standards cooperatively arrived at are what most of us have been talking about. We look to the manufacturer, the distributor, and the consumer to sit down together and come to agreement upon a plan of performance.

"At this point I raise the question: Do we wait in vain? If there is some fundamental and inescapable reason why those who are engaged, in selling goods to consumers cannot go ahead with us in formulating and using standards, we who are trying to educate consumers should know it."

John Benson, president of the American Association of Advertising Agencies, and Donald M. Nelson, vice-president of Sears, Roebuck & Company, were two of the principal speakers for industry's point of view.

Cooperation Urged

Analyzing the problem of consumer education from the standpoint of the need for cooperation between consumer and producer groups, P. G. Agnew, secretary of the American Standards Association, said:

"It seems to me that to a large extent consumers, on the one hand, and business men, on the other, are not speaking the same language. Each one sees his own side, but fails to visualize the other fellow's side of the problem.

"Some years ago I was given the job of getting manufacturers of cast-iron pipe and the engineers of consuming companies together on the subject of specifications for pipe. When I went to the manufacturers they explained that I would waste my time by talking with the engineers, who were impracticable theorists. The engineers said it was hopeless to work with manufacturers who had been intent on selling inferior pipe for a dozen years and who, they were sure, would not live up to any agreement they entered into.

"It was a year before it seemed safe to invite them to sit down in the same room to talk things over. After much talk they agreed to develop new specifications cooperatively. A wise and experienced engineer agreed to take the chairmanship of the technical committee, but only upon three conditions:

(1) They must agree to agree upon what they did agree upon and what they did not agree upon. That is, they must first agree upon the exact point at which the road began to fork. This was done, and agreement was reached upon what the moot questions were, one of which was the accuracy of a certain formula.

(2) They must agree upon why they disagreed upon these moot questions. After long discussion they decided that there were insufficient known facts to give the answer, and hence one man's opinion was as good as another's.

(3) They must decide upon what they were going to do about it.

"The final result was that the manufacturers

Consumer Movement Shows Future Promise

The rise of the consumer movement is one of the biggest developments that will extend into the future, said John W. Wingate, Professor of Merchandising at New York University, in an address before the fourth fashion clinic of the Millinery Merchandising Executives Association, New York. The stores of tomorrow, Professor Wingate continued, will utilize customer councils to provide adequate contact with consumer groups, use simple types of informative labels on merchandise, develop accurate knowledge on the part of sales people, and produce advertising giving far more specific data on goods than at present.

raised some $70,000, which was expended in large part under the general direction of the engineers, and the necessary facts were obtained. With the facts at hand the controversies disappeared.

"Just so, I believe Mr. Nelson and Mr. Benson are fundamentally right in declaring that there must be cooperation between business and consumer groups. I feel confident, however, that in large measure consumer groups and merchandising and advertising men do not realize the extent to which they are not speaking the same language. Mr. Nelson has told us that half of all retailers do not even know that there is a large and rapidly growing consumer movement in this country.

"I would urge that as a first step business and the consumer leaders examine, and together thresh out, the question of what they agree upon and what they do not agree upon. Where is the fork in the road?

"It seems to me that the nucleus of the situation lies primarily with the store buyer and the store-buyer philosophy, which is fundamental with most retail executives, and, secondarily, with advertisers.

"Consider an example. Mr. Benson tells us that advertisers are striving to clean up their seamy tenth. I believe that consumer leaders understand this effort, that they are in complete sympathy with it, and that they will be glad to cooperate in the cleaning-up effort.

"But this is only a small part of the story. What the consumer leaders are after is something far more fundamental. They are asking for a major re-orientation in methods, and in objectives in advertising and merchandising.

"Mr. Benson is trying to make all advertisers fish only in season, throw back the small fish, and prevent anyone from dynamiting the waters and killing all the fish. He has made it clear that advertising, like fishing, is a system of techniques. The consumer leaders understand that this is so, but they dislike the idea of being treated as poor fish, whose sole function in life is to be hooked.

"Most consumer leaders would, I believe, take the ground that the stores of the country are now operating as outlets for manufacturers' goods rather than serving, as merchants are fond of saying, as purchasing agents for their communities.

"This may not be the exact fork of the road, but it is getting pretty near it. It is for this reason that the consumer groups are striving toward a major re-orientation in merchandising and advertising methods.

"Consumer leaders, in my opinion, greatly underestimate the difficulties in the way of a solution. They are likely to be too cocksure, thinking they have the solution of every difficulty in hand by the use of standards, informative labeling, etc. Strategically, the leaders of the consumer movement will be in a stronger position if they do not demand that all these solutions of theirs be adopted forthwith as a sure cure. I believe they would gain by asking for a broad study and trial of such devices to determine where they will work best.

"On the other hand, advertisers and merchandising groups seem to have overlooked the fact that leaders of consumer groups are in a position to bring to business as a free service the equivalent of very costly processes of market research.

"We hear much these days of the necessity of business selling itself to the public. In what other way can they do so better than by extending the cooperation for which the consumer groups are asking.

"It seems to me that business men, and especially merchandising and advertising groups, should cooperate closely with the consumer groups—that they should together determine:

"First, just where the fork in the road lies

"Second, why they disagree when they do, and

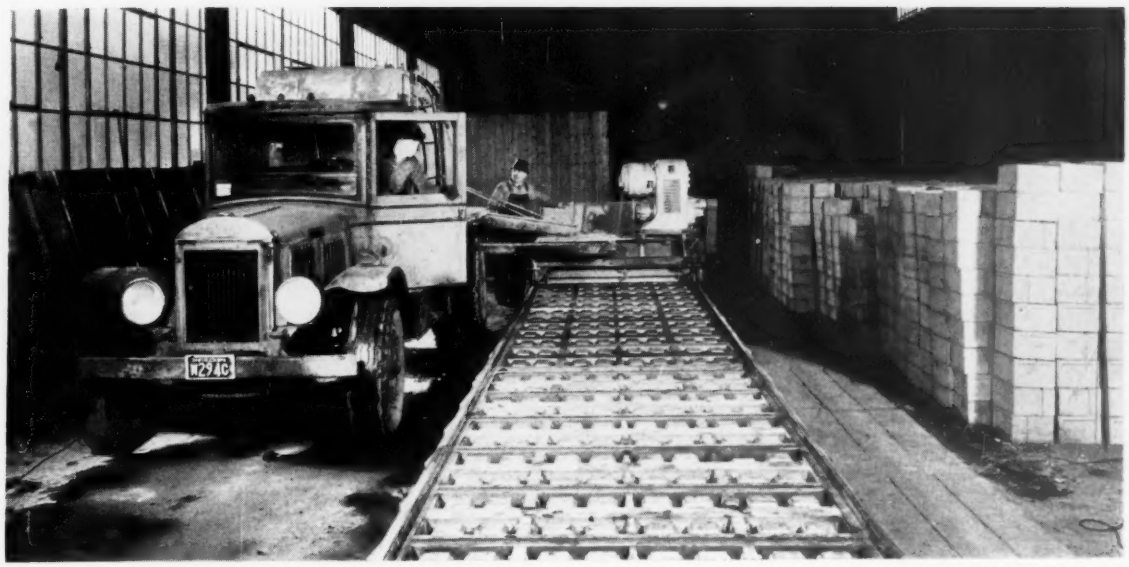
"Third, what they're going to do about it."

British Standards Institution Issues Drafts of New Standards

Drafts of proposed British Standards which may be of interest to American industry include the following received recently by the American Standards Association. The final date on which comments may be received by the British Standards Institution for each draft is shown following its title.

Ordinary Portland and rapid hardening Portland cements (Revision of BS12-1931) Sept. 30, 1939
High Alumina Cement Sept. 30, 1939
Naval brass (special mixture) bars and sections (Revision of BS 252-1927) July 14, 1939
Haemoglobinometers Sept. 9, 1939
Vegetable parchment for the wrapping of dairy products Sept. 23, 1939
Water tube boilers and their superheaters Sept. 9, 1939
Commercial acceptance tests of bakers' ovens Sept. 16, 1939

Copies of these draft standards may be borrowed and comments forwarded to the British Standards Institution through the office of the American Standards Association.



Courtesy Business Week

A movable combination hopper and agitator fills the molds for standardized precast concrete blocks and shapes for the building industry. The molds may be all one kind or an assortment of shapes and sizes.

New Company Standardizes Concrete Building Units

"I HAVE seen structural steel climb to its rightful place in the building industry, through standardization of shapes and quality. For some time I have felt that similar standards needed to be established for precast concrete." says William P. Witherow, board chairman of Cemenstone Corporation, Pittsburgh, in his announcement of the organization of the new company. The company will engage in the nationwide standardization of prefabricated concrete units, produced by newly patented principles of manufacture, according to an article in the April 1 issue of *Business Week*.

"The Cemenstone system of producing concrete members will provide everything necessary for outer and inner walls, floors, and roofs, delivered to the job, ready to be put in place. Sizes are coordinated with structural steel sizes, permitting as much latitude in architectural design as structural steel. They will be of the same sizes and quality the nation over, and will be manufactured in plants strategically located in every principal community. Cemenstone Corporation will not itself manufacture; it will supply its patented equipment to qualified licensees who will operate under adequate safeguards for ensuring established standards of quality.

"Three main features of the Cemenstone manufacturing system are the use of vibration, heat, and mass production. Vibration during the molding operation is said to produce a finer texture and a stronger product. Heat, used primarily to hasten chemical reactions in the cement, is said to induce uniform shrinkage and a product of uniform light color. Mass production has been made possible by the development of a system which permits rapid cycles of manufacture and the production of several different shapes at one operation. Among the products produced by the system are blocks for wall construction, channel-shaped, short-span slabs for floors and roofs, long-span slabs, concrete plank, joists, brick, insulating tile, and veneering. Colors will be cast on special order. Other products are curbs, sidewalks, fence posts, blocks inset with glass panels, and a lightweight insulating concrete produced by the addition of aluminum powder to portland cement."

ASTM Committees Recommend New Standards and Revisions

THIS is the year when the American Society for Testing Materials issues its triennially published Book of Standards. As a result all ASTM committees are concentrating on bringing specifications and tests up to date, adopting revisions, taking action to adopt existing tentative specifications as standard, and at the same time recommending new specifications covering many materials not now included. Approximately 150 meetings were held during ASTM committee week March 6-10 in Columbus with a registered attendance for the week of about 600.

Several new specifications on Steel are to be submitted to letter ballot and other important actions involving committee standardization work will be taken as a result of meetings of Committee A-1 on Steel.

New Work on Bolt Steel

The need for standardized requirements for structural bolt steel resulted in the decision to appoint a section to draft recommended requirements.

Concentrated work in recent weeks for Subcommittee IV on Spring Steel and Steel Springs resulted in recommendations to approve quite a number of editorial changes and some substance changes in the four specifications covering various types of steel springs, elliptical and helical. Changes were proposed in the five specifications covering various types of spring bar steel, in the tables of permissible variations which are being brought up to date, and in one specification covering carbon-steel bars for general purpose springs (A 58). This last specification is to be studied for the June meeting to determine whether it should be revised more extensively or withdrawn.

A proposed specification, on which agreement is nearly complete in Subcommittee VI on Steel Forgings and Billets, provides for seven classes of forgings. This new specification will replace carbon-steel requirements in the three existing specifications A 18, A 19 and A 20, and brings up to date certain of the requirements.

The committee on Wrought Iron, A-2, proposed a revision requiring pipe to be made from "all pig puddled or processed" wrought iron.

The newly formed subcommittee on cast iron soil pipe of Committee A-3 on Cast Iron plans to modify the ASTM specifications for this material to bring them in line with requirements set up by committees functioning under the sponsorship of the American Standards Association.

One of the important subjects discussed at the meetings of Committee A-5 on Corrosion of Iron and Steel was the first report of the committee in charge of inspection of the wire tests.

Revisions will be recommended in several existing specifications providing requirements for protective coatings on wire and wire products, and proposed methods for determining thickness of electrodeposited coatings will be recommended during the year as a new tentative standard.

A number of important actions were taken at the meeting of ASTM Committee B-3 on Corrosion of Non-Ferrous Metals. These include a proposed standardized method of salt-spray corrosion testing and a cooperative series of accelerated laboratory tests using the total immersion procedure in both aerated and non-aerated solutions.

A new subcommittee has been organized for the purpose of developing specifications. The first work of this group will probably deal with electroplated coatings on non-ferrous metals.

During the past year Committee B-5 on Copper and Copper Alloys found it necessary to enlarge the committee and subdivide its work because of the development of new alloys and the increasing use of the materials under the jurisdiction of the committee.

Standards for Brass Sheet, Strip

The subcommittee on copper zinc sheet and strip reported completion of new specifications for leaded brass sheet and strip. These will be submitted to the Society at the annual meeting in June for publication as tentative. The group on copper-tin sheet and strip presented revisions in the tentative specifications for sheet and strip

phosphor bronze (B 103) which will provide for the addition of a new alloy of leaded phosphor bronze.

Another subcommittee presented proposed new specifications for copper-nickel zinc and copper-nickel sheet and strip.

New specifications for beryllium-copper, which will include requirements for sheet, strip, wire, and rod, were completed. Revisions were approved for immediate adoption in the standard specifications for naval brass rods for structural purposes (B 21).

Revisions for Copper Pipe

Extensive revisions were developed in the specifications for copper pipe, standard sizes (B 42) and due to the nature of the changes the revised specifications will be published as tentative. The standard specifications for seamless copper tubing, bright and annealed (B 68) are to be changed at several points and published as tentative. The committee also decided to revise the specifications for seamless copper tubes (B 75) to include material now covered in specifications for seamless copper boiler tubes (B 13) which will be discontinued. Important revisions were approved for immediate adoption in the specifications for copper water tube (B 88). These specifications were approved by the American Standards Association in 1934 as American Standard Specifications for Copper Water Tube (H23.1-1934). Extensive changes have been completed in the specifications for brass pipe, standard sizes (B 43). Specifications for miscellaneous brass tubing are being prepared.

New tentative specifications for copper and copper alloy forging rod were presented for publication to replace the existing specifications for brass forging rod (B 15).

Tentative revisions (published last year) of the specifications for manganese-bronze ingots for sand castings (B 7) and for manganese-bronze sand castings (B 54) were recommended for adoption in the specifications this year and a new revision was approved to provide for the inclusion in these two standards of requirements for a high tensile strength manganese-bronze alloy.

New tentative specifications for nickel silver casting alloys which will cover four alloy compositions or grades were proposed.

A new subcommittee has been appointed to consider questions dealing with methods of testing copper and copper alloys.

A change providing an increased range of 80 to 84 per cent tin and 4 to 6 per cent copper, in the tin and copper contents of alloy No. 2 as included in the specifications for lead and tin-base alloy die castings was proposed by Committee B-6 on Die Cast Metals and Alloys.

Committee B-7 on Light Metals and Alloys, Cast and Wrought, recommended revisions in two existing standards covering aluminum ingots for remelting and aluminum for use in the manufacture of iron and steel. These are to be reissued as tentative specifications.

A new specification will be issued covering aluminum-base alloys in ingot form for die castings.

Revisions have been proposed in several existing specifications as follows: (1) aluminum-base alloy in ingot form for sand castings (B 58), and for permanent mold casting (B 112) (to limit analysis to elements listed unless the presence of others is indicated in routine analysis); (2) aluminum-alloy sheet and plate (B 78), and aluminum bars, rods and shapes (B 89) (revise limits on sizes, source of material and mechanical properties to conform to present commercial practice); (3) aluminum-magnesium-chromium sheet and plate (B 109) (add requirements for intermediate temper material and revise requirements with respect to source of material); (4) magnesium base alloy ingot for remelting (B 93) (add another die-casting alloy with composition conforming to limits selected by Committee B-6 on Die-Cast Metals and Alloys).

Committee C-1 on Cement decided that it will recommend that the final setting time requirement be eliminated from the present ASTM

ASTM Annual Meeting June 26-30

Action on approval of standards and tentative standards will be taken by the American Society for Testing Materials during its Annual Meeting at Atlantic City June 26 to June 30.

In addition to the technical papers and reports of committees the Fifth Exhibit of Testing Apparatus and Related Equipment and a photographic display devoted to the theme "Testing and Research in Engineering Materials" will be features of the meeting.

Important technical discussions are scheduled on paint testing, shear testing of soils, quantitative spectrochemical analysis, effect of subatmospheric temperatures on the properties of metals, and freezing and thawing.

Standard Specifications for High-Early-Strength Portland Cement (C 74). A new method for determining the specific gravity of cement was accepted.

Act on Concrete Standards

All of the specifications and methods of test for which the Committee on Concrete and Concrete Aggregates, C-9, is responsible have been reviewed and were acted upon at the meeting March 6-10.

The subcommittee on methods and apparatus for testing concrete is recommending revisions in the methods of making compression tests (C 39), flexural strength (C 78), making and sorting compression specimens in the field (C 31), securing specimens of concrete from structures (C 42), and compression tests with portions of beams (C 116).

The subcommittee on specifications and methods of test of aggregates has prepared important revisions in the tentative specifications for concrete aggregates (C 33) and the specifications as revised will be recommended for adoption as standard. The method of test for unit weight of aggregate (C 29) will also be revised this year and adopted as standard to supersede the present method C 29-27.

Committee C-9 took action at its meeting to join with ASTM Committee D-4 on Road and Paving Materials in recommending the revision and adoption as standard of the tentative method of test for abrasion of coarse aggregate by use of the Los Angeles machine (C 131).

There has been much interest in tests for determining the soundness of concrete aggregates. A method using sodium sulfate or magnesium sulfate (C 88) has already been established. This subject, however, has been given further study and the committee is planning to publish in its report this year as information a "Proposed Method of Test for Soundness of Aggregate by Use of Magnesium Sulfate." Should this be adopted by the Society it would represent a radical revision in the existing tentative standard.

The development of a proposed pH method of test for determining organic impurities in sand has been completed.

New specifications were considered by Committee C-15 on Manufactured Masonry Units for solid load-bearing concrete masonry units and these are to be recommended for publication as a new ASTM tentative standard.

A number of proposed standards were considered by Committee D-4 on Road and Paving Materials.

It was decided to recommend revisions in three specifications covering various types of emulsified asphalts with the thought that these specifications (emulsified asphalt (for coarse aggregate plant mixes) (D 397), for retread and coarse aggregate mixes (D 398), and for heavy premix-summer grade (D 399)) would be adopted as standard, or if possible combined into a single standard.

The method of test for loss on heating of oil and asphaltic compounds (D 6) is to be revised. Changes are to be proposed in two of the distillation tests (D 20 covering distillation of tar products suitable for road treatment and D 402 covering distillation of cut-back asphaltic products).

A testing procedure for determining the relative dustiness of either coal or coke has been agreed upon, the Subcommittee on Dustiness reported to Committee D-5 on Coal and Coke. This will make it possible to evaluate the effectiveness of various treatments for eliminating the formation of dust which is often objectionable when handling solid fuels.

A standard method for determining ignitibility of coal and coke is another important project under development. Agreement has been reached on a statement or definition of this property.

A recommended practice of accelerated weathering testing of roofing materials will be published, Committee D-8 on Bituminous Waterproofing and Roofing Materials decided.

In order to bring specifications up to date for inclusion in the *1939 Book of ASTM Standards*, Committee D-8 is suggesting changes in the requirements for coal-tar saturated felt (D 227), in the requirements for asphalt-saturated asbestos felt (D 250); and in the specifications for saturated woven cotton fabrics (D 173).

To put into effect a decision reached last year to insert requirements for flash point in all specifications for asphalt and coal-tar pitch, the tentative specifications for asphalt (D 312) will carry a minimum flash point (Cleveland open cup) of 375 F.

New Work on Rubber

Committee D-11 on Rubber Products decided to organize a new Technical Committee on Automotive Rubber. The work of this new group is expected to include development of standards for rubber used in motor mountings and similar automotive applications; and possibly other rubber products such as V-belts and various types of hose. In this work the committee will have the cooperation of the Society of Automotive Engineers.

Committee D-11 has completed a survey of the classes of packings and of specifications for these materials, including rubber sheet packings and asbestos sheet packing. This information is being compiled for use in the standardization of test methods for these products.

The tentative method of tension testing of vulcanized rubber (D 412) is to be revised and continued as tentative. One change will make the ACS and Federal Specification Board micrometer used for thickness measurements the ASTM standard in place of the present one.

Two cooperative laboratory checks for determining small amounts of copper and manganese in rubber have been completed. Discrepancies between laboratories using the same methods have been found in the case of both manganese and copper, indicating that the methods in their present form are not satisfactory. The subcommittee in charge is continuing its work in an effort to develop a suitable analytical procedure for determining these elements. The committee has also decided to undertake a study looking toward a general revision of the methods of chemical analysis of rubber. This work will be handled by a special section.

The group working on rubber products for absorbing vibration appointed a section to investigate further the method for determining compression set. It also presented an alternate method for hardness of rubber using a Pusey and Jones Plastometer as a new tentative method.

The subcommittee on dynamic fatigue testing considered test methods for compression flexing using three instruments, the Goodrich Flexometer, the Firestone Compressatometer, and the St. Joseph Lead Company flexing machine. Because of the importance of this type of test in evaluating rubber for heat resistance in flexing and resistance to deterioration caused by compression hysteresis it was decided to incorporate the procedures in a new tentative method of test.

The subcommittee on hard rubber has completed proposed methods for physical tests, chemical analyses, and electrical tests of this material and will recommend these to the Society for publication as tentative.

In the three specifications D 27, D 353, and D 469, covering various types of insulated wire and cable, the voltage limits for shielding will be lowered in accordance with industrial practice. Wall thickness on No. 8 Awg wire is to be changed from 4/64 in. to 3/64 in., providing similar action is taken in Underwriters Laboratory Specifications and the National Electrical Code.

The committee accepted a specification for insulating compound for a tough rubber jacket for electric cords and cables to be issued as tentative this year with the understanding that additional requirements may be developed and agreed to by the test section for inclusion in the specifications.

Action will be taken by the American Society for Testing Materials on the recommendations of its committees at its Annual Meeting June 26-30 at Atlantic City. Standards and tentative standards accepted by the Society will be published in its Book of Standards and Book of Tentative Standards to be issued this year.

ASA Standards Activities

Each month this space will be assigned to the listing of new projects, new standards, drafts of standards submitted to the American Standards Association for approval, or drafts not yet submitted but which are now being considered by ASA committees.

Standards Approved Since Publication of Last List of Standards, February 1

(Where price is not shown, copies of standards were not available at time of publication of this issue. Orders will be received by the ASA and filled when copies become available.)

American Standard Safety Code for Mechanical Refrigeration (B9-1939) Revision of B9-1933

American Standard Specifications for Welded Wrought-Iron Pipe (B36.2-1939) Revision of B36.2-1934

American Standard Specifications for Electric Fusion-Welded Steel Pipe for High-Temperature Service (B36.11-1939)

American Standard Wrought-Iron and Wrought-Steel Pipe (B36.10-1939) Revision of B36.10-1935

Standards Now Being Considered by Standards Council for ASA Approval

Standard Vacuum Tube Base and Socket Dimensions (Revision of C16c-1932)

Manufacturing Standards Applying to Broadcast Receivers (Revision of C16d-1932)

American Recommended Practice Manual of Accident Prevention in Construction (Revision of A10-1934)

Proposed American Standard for Indicating Pressure and Vacuum Gages

New Projects Authorized

Standardization in the Field of Aeronautics (D9)—Society of Automotive Engineers, *sponsor*

Specifications for Water Cooling Towers

New Projects Requested

Protection of Homes and Small Properties from Fire Hazards

Standardization of Voltages Below 100 Volts

Standardization of Periodicals and Their Documentation

Standardization of Coal Stokers

Drafts of Proposed Standards Available

Allowable Concentrations of Carbon Monoxide (Z37)

Revised *Standard* Markings For Electrical Terminals

This new edition includes for the first time

markings for single and polyphase step-type voltage regulators and standardization of the arrangement of slots and blades for polarized and non-polarized attachment plugs and receptacles

Diagrams and rules outline standard terminal markings for

rotating apparatus
constant potential transformers
step-type feeder voltage regulators
industrial control apparatus
instrument transformers
current-limiting reactors
attachment plugs

American Standard Rotation, Connections and Terminal Markings for Electric Power Apparatus (C6-1938) $1.00

Members of the American Standards Association are entitled to 20% discount on all approved American Standards ordered through the ASA office

American Standards Association

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